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ABSTRACT

The hypotheses of this study include: (1) intentional forgetting, operationalized by a forget signal, will produce augmented recall; (2) highly organized groups of sentences will produce the best recall; and (3) anxiety state will produce a complex interaction with the forget signal and degree of organization variable on the amount of materials recalled. Two experiments, one using a recall paradigm and one using a recognition paradigm were run using 40 and 80 male ROTC students respectively. All subjects were given a 20-item anxiety scale. This was followed by five experimentally assigned sentence lists. A forget signal was used. Tentative conclusions for both experiments are: (1) for the recall and recognition of sentences, the forget signal produces augmented recall but operates differentially depending on the degree of organization; (2) this process does not seem to proceed on the basis of rehearsal and dropouts; and (3) the anxiety state is negatively related to performance but not significantly so. (KJ)

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(1) Title of Paper

FORGETTING AS A FUNCTION OF FORGET CUE, SENTENCE CATEGORIZATION, AND STATE ANXIETY

(2) Problem or Major Purpose

Forgetting may be viewed as an adaptive process within the human organism that has both voluntary and selective process characteristics. A review of the literature, however, revealed few research studies concerned with selective or adaptive forgetting. A few recently conducted studies, e.g., Bjork (1967); Bjork et.al. (1968) and Elmes (1969) have reported on selective forgetting. However, all of these studies used the word as the unit of response. There were no studies reported that used the sentence as the response unit in a selective forgetting paradigm.

The primary independent variable in the present study was the occurrence or non-occurrence of a visual forget signal during the list of sentences. If a visual forget signal occurred, it meant that the Ss did not have to recall any of the sentences which preceded it, only those sentences subsequent to the signal. It was hypothesized based upon the prior findings with words that intentional forgetting, operationalized by the forget signal, would produce augmented recall.

A second question pursued within this investigation was concerned with the effects of organization upon intentional forgetting. Experiments with words as the response unit, e.g. Bousfield (1953); Cofer (1967); and Cohen (1967) have demonstrated the facilitating effects of "organization" upon recall. The degree of organization, the second independent variable, was included in order to extend the typical findings with words to include sentences. Categorized and random groups of sentences were employed for this task. It was hypothesized that the highly organized groups of sentences, i.e., sentences belonging to fewer categories would produce the best recall.

A number of investigators have demonstrated that anxiety effects performance, e.g., Spielberger (1968); Sieber (1969); and O'Neil (1969). The third independent variable, state anxiety, was used to assess the effects of A-State upon the memorization of sentence material. A-State was hypothesized to produce a complex interaction with the forget signal and the degree of organization variable on the amount of materials recalled.

Atkinson et al. (1969) compared recall and recognition procedures. They found that recognition performance was superior to recall. The difference

between these processes was attributed to storage effects. Mandler et. al. (1969) have further demonstrated that the number of categories in organized categorized lists influences both recall and recognition processes. Thus, we will report the results of two experiments, one that employed a recall paradigm and a second that employed a recognition paradigm. The stimulus materials for both experiments were nine word military definitions. For example: anti-airborne minefield is laid to protect against airborne attack.

(3) Subjects

The Ss were 40 and 80 male ROTC students in Exp. I and Exp. II respectively.

(4) Procedure

Acquisition Phase: For brevity's sake, the design and procedures of the recall and recognition experiment will be considered together. Initially, all Ss were presented with a 20-item state anxiety scale to assess their pre-experimental A-State level. Each S then received the experimental instructions, followed by 5 experimentally assigned sentence lists. Two within-Ss variables were combined orthogonally to yield the first four lists. The first independent variable consisted of the presence or absence of the forget signal. However, if the forget signal did occur, it was made to follow the tenth

sentence. The second independent variable consisted of the degree of organization. Within a given list, sentences were presented one at a time every 9.5 seconds. A 4 x 4 latin square was used to counterbalance the materials. Interspersed between these (5) treatments was a 5-item short version of the A-State scale.

Recall vs Recognition: Test Phase. The Ss tasks during the test phase of the recall experiment was to type-in the correct response to the definition stem, a two word prompt. Prompts were randomly presented from the last ten sentences presented during acquisition. In the recognition experiment, S were forced to select the correct answer from among 5 choices, four being distractor items.

Selective Forgetting Assessment. For the 5th and final list, half the Ss each received either a categorized or a non-categorized list of 20 nine-word definitions. Both lists contained a forget signal. However, all Ss responded to all 20 two-word prompts for recall or were forced to select a choice for the recognition experiment. Ss were not forewarned within list 5 that they would be responsible for items prior to the forget signal.

(5) Results

The mean for the recall and recognition experiments for the first four lists are presented in Table 1.

(Insert Table 1 about here)

These means correspond to the recall of the last ten sentences presented during acquisition.

The ANOVA on the number of correct answers for the first four lists disclosed that for recall the main effect of forget signal and the forget signal by degree of organization interaction were significant. For the recognition experiment both main effects of forget signal and degree of organization were significant as well as the interaction. Figure 1 illustrates these results.

(Insert Figure 1 about here)

Table 2 illustrates that the overall means for the fifth list did not differ significantly for recall; however, a significant interaction was found.

(Insert Table 2 about here)

For the recognition experiment, the main effects of organization and forget signal were significant as was the interaction. Figure 2 illustrates these results.

(Insert Figure 2 about here)

Serial Position Effects. Serial Position effects for the first four lists and the final list are presented in Figures 3A & 3B; 4A & 4B respectively.

(Insert Figures 3A & 3B; 4A & 4B)

It is apparent from these results that the typically observed primary and recency effects for words were absent when sentences were used as the unit of response. Although procedural differences must be noted, these results tend to corroborate the findings of Mandler and Mandler (1967).

Anxiety. The analyses of the anxiety data indicated that although not statistically significant A-State tended to be negatively related with performance.

Conclusions and Implications. It can be tentatively concluded from Exp. I & II that: (1) for the recall and recognition of sentences, the forget signal produces augmented recall but operates differentially depending upon the degree of organization; (2) that this process does not seem to proceed on the basis of rehearsal and dropouts as suggested by studies with words as the unit of response e.g. Atkinson and Schiffrin (1969); (3) that A-State is negatively related with performance but not significantly so.

The implications from the experiments just described suggest that new theories and models will have to be formulated to account for the observed differences when the unit of response is shifted from the word to the sentence.

Papay & Hansen (1970)

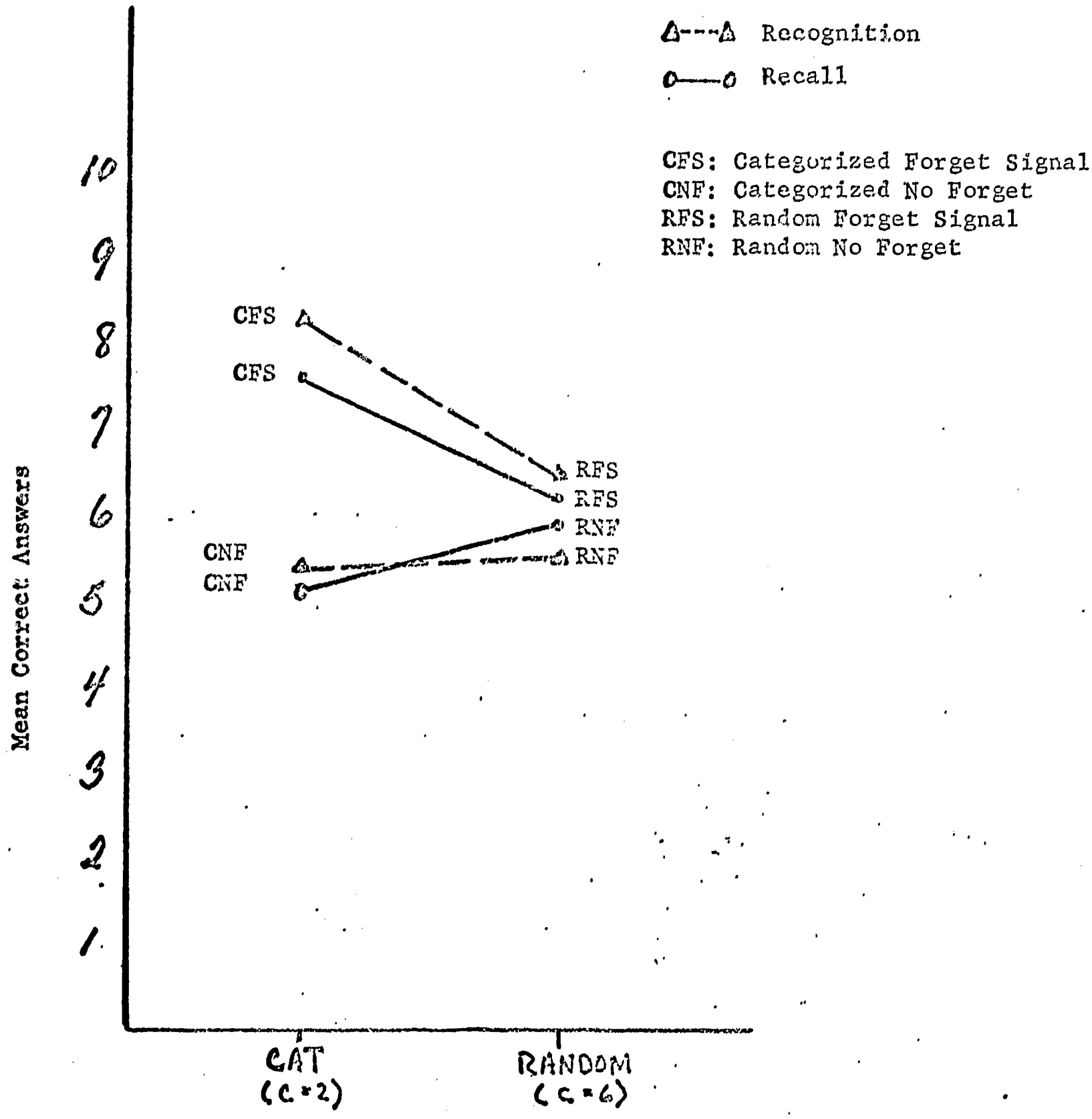

Figure 1. Forget Signal X Degree of Organization Interaction for Recall and Recognition

Papay & Hansen (1970)

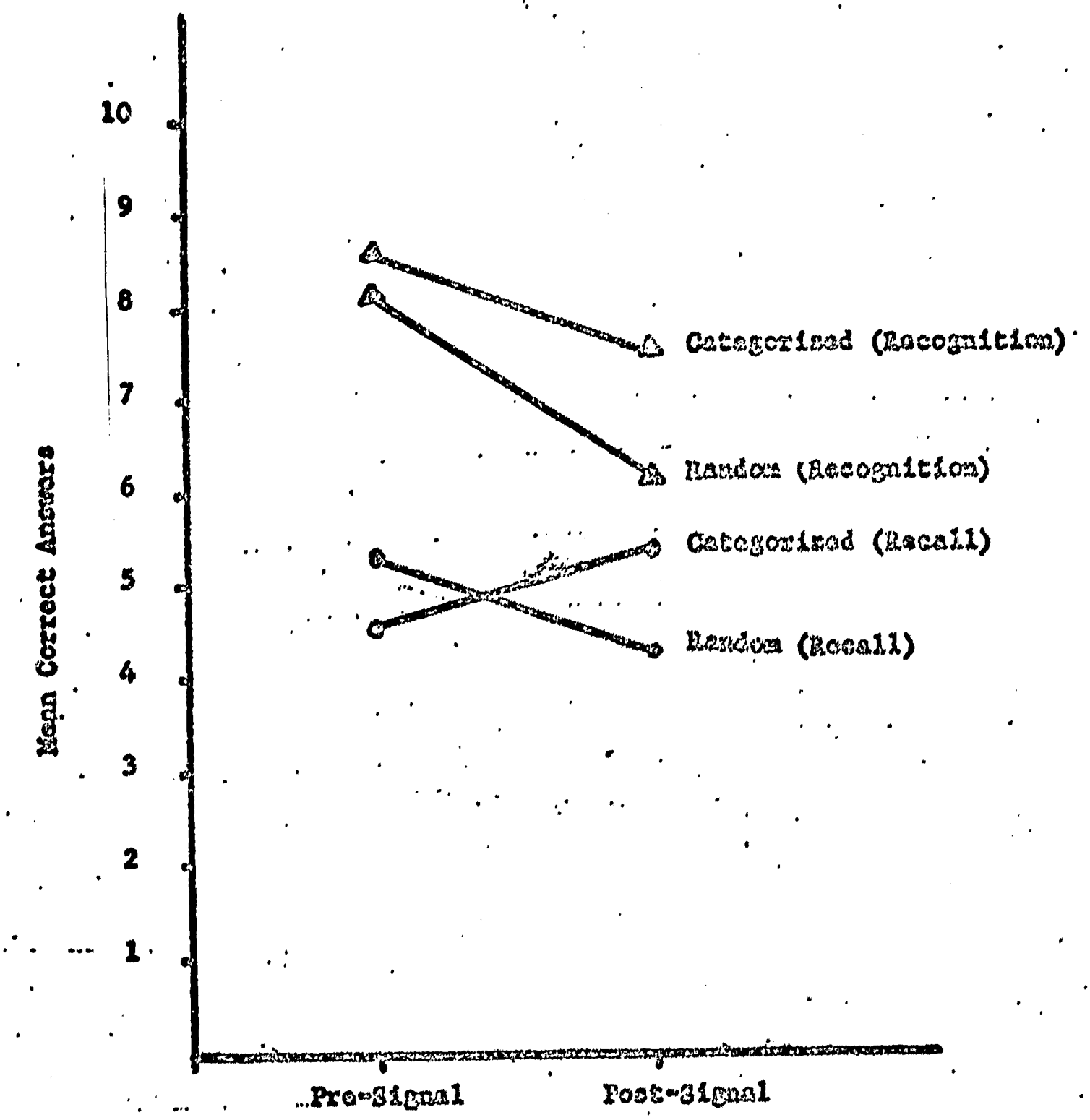

Figure 2. Interaction of Degree of Organization and Pre-Post Signal Recall on the Last List

Papay & Hansen (1970)

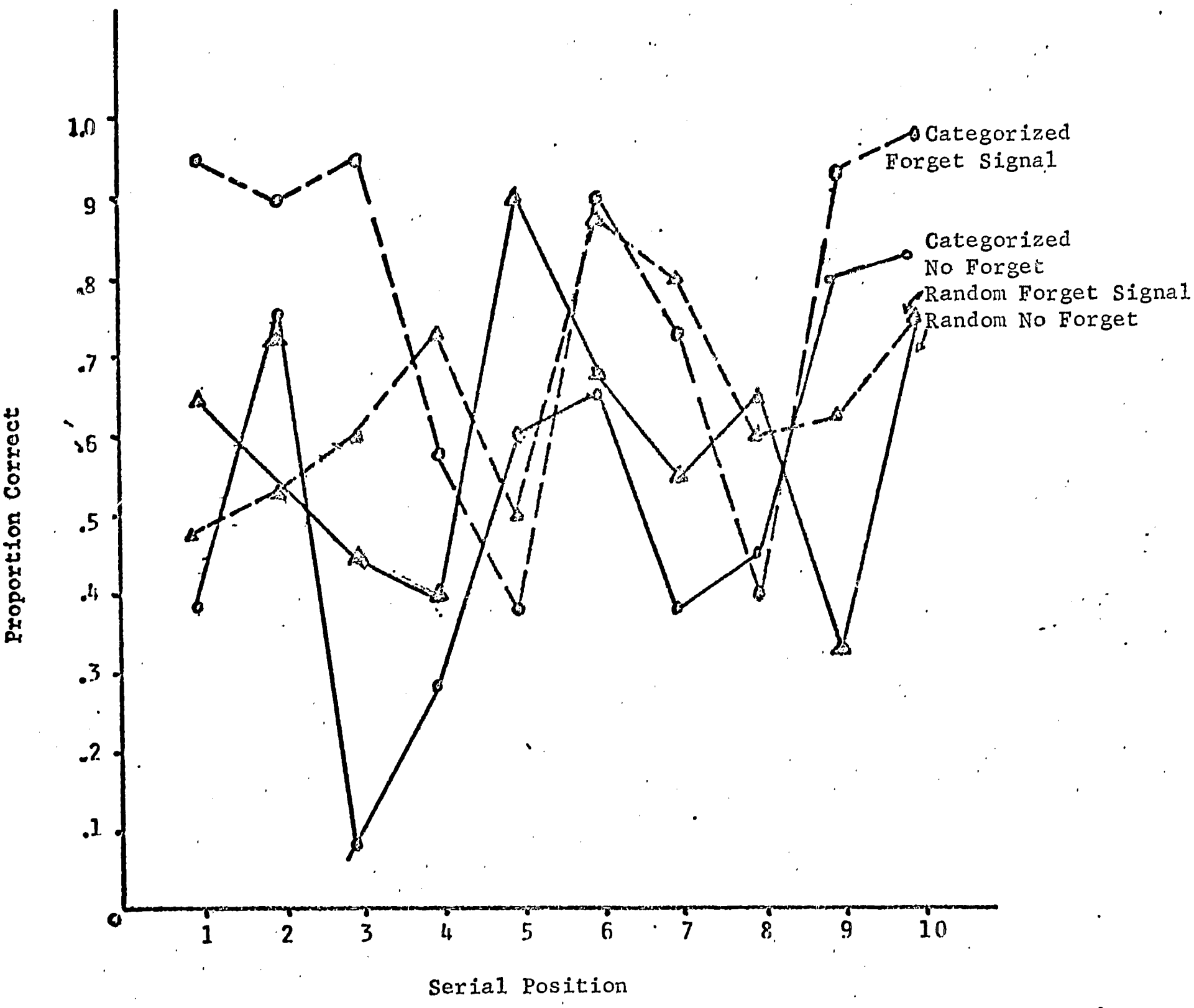

Figure 3A. Serial Position Effects of First Four Lists for Recall

Papay & Hansen (1970)

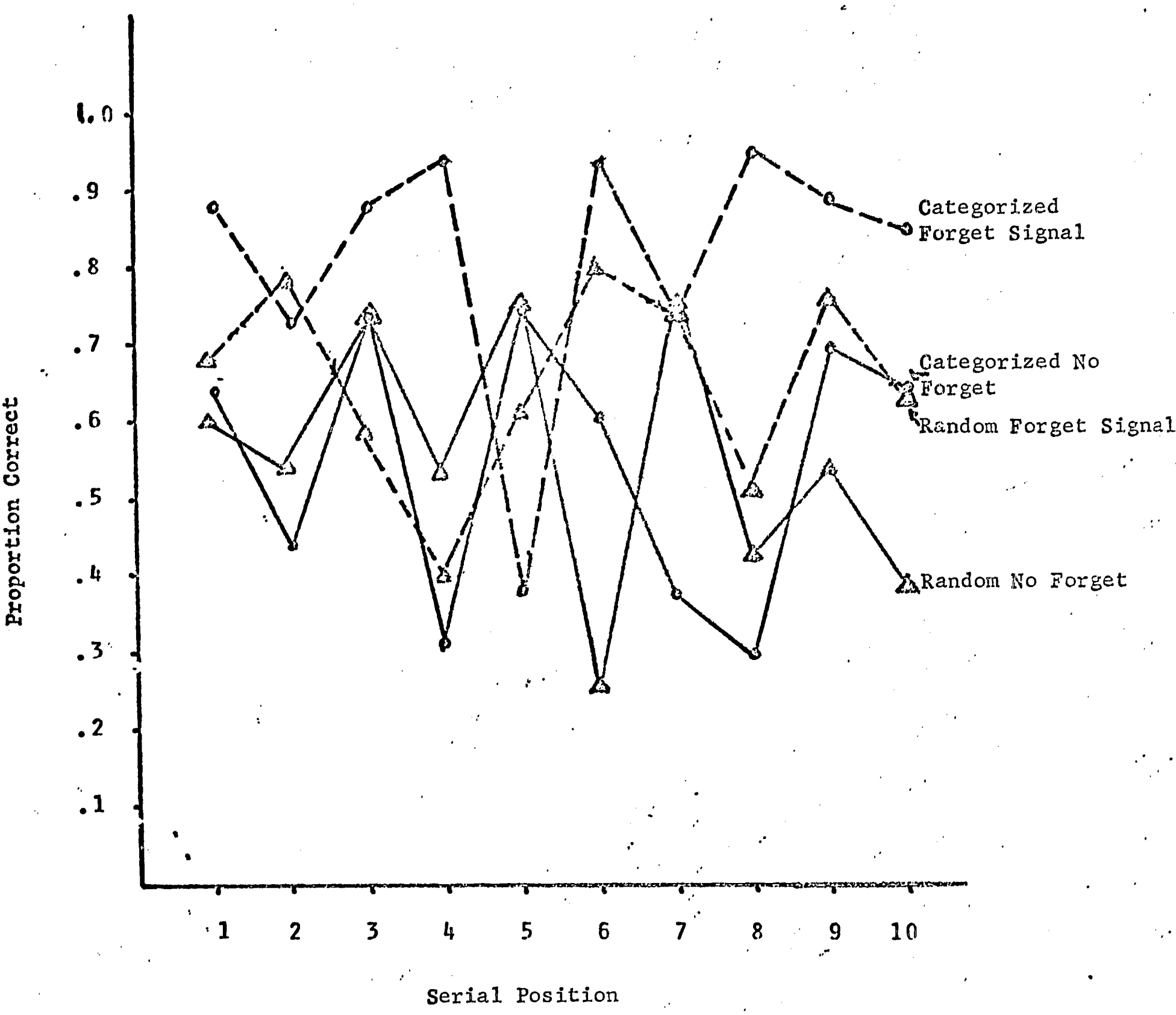

Figure 3B. Serial Position Effects of First Four Lists for Recognition.

Papay & Hansen (1970)

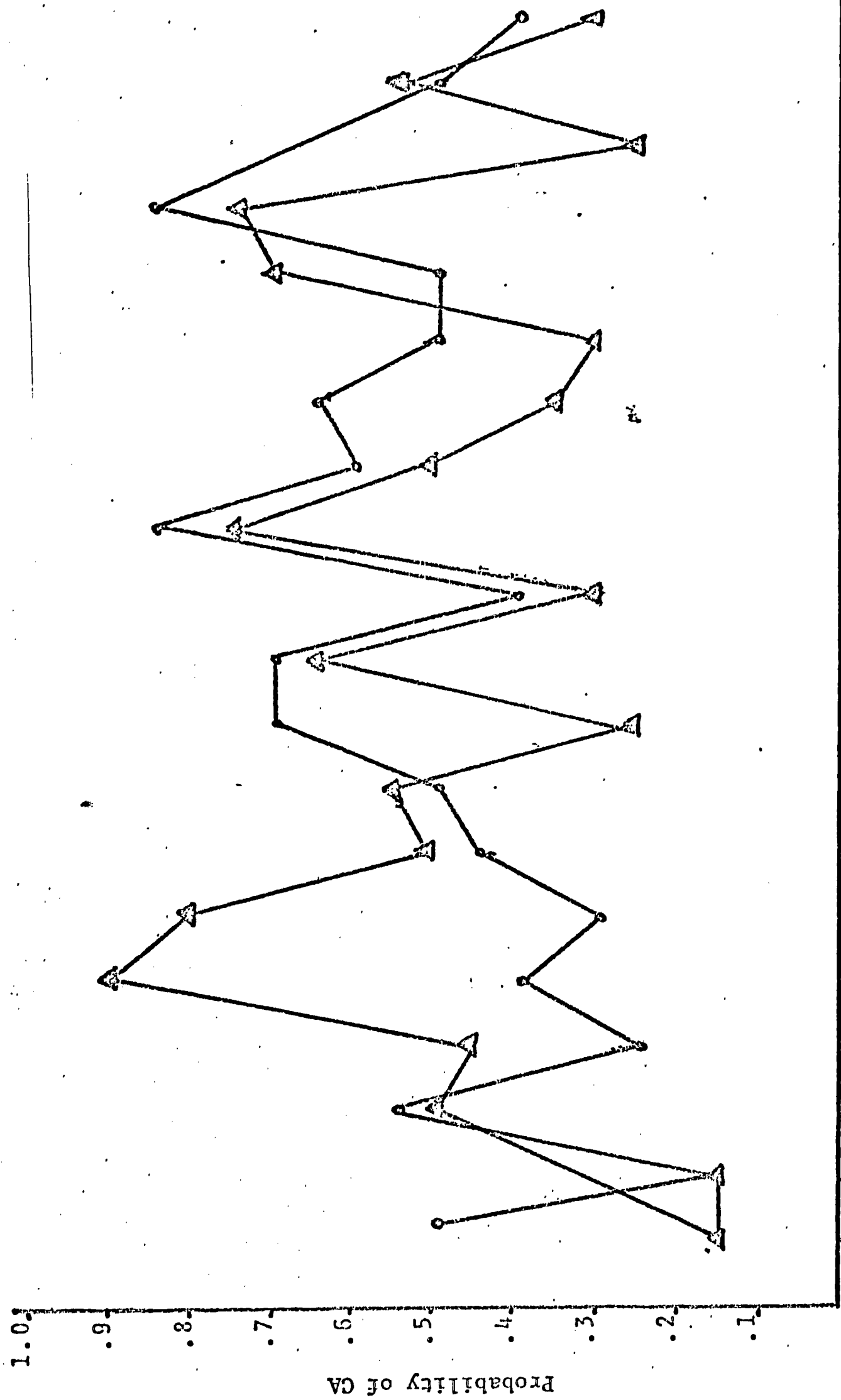

Figure 4A. Serial Position, Effects of Final Lists for Recall

Papay & Hansen (1970)

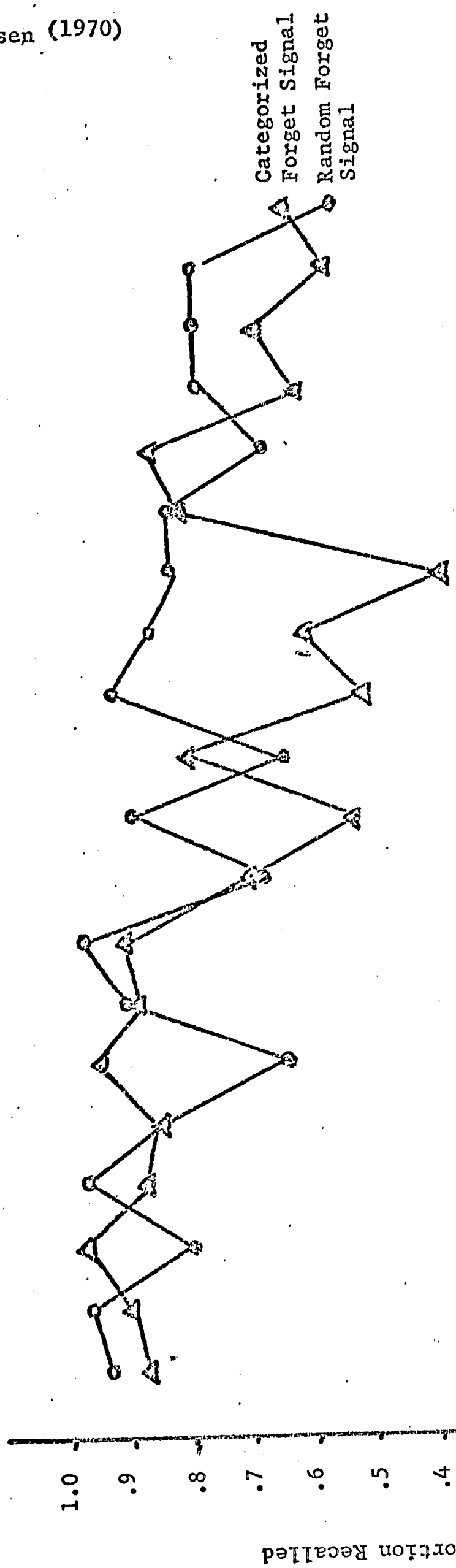

Figure 4B. Serial Position Effects of the Final List for Recognition